Northeast Fisheries Science Center

Science Spotlight

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August 13, 2008
SS08.13

Pilot Project with Fishing Industry Seeks to Provide More Detailed Data on the Region's Fisheries and Environmental Conditions

NOAA "Study Fleet" Tests Electronic Logbook System

For some commercial fishermen, flounders are not just species of fish but a computer software system being tested aboard fishing vessels to record haul-by-haul data. The resulting electronic logbook system may one day replace paper logbooks in the New England groundfish fleet, providing near real-time information to improve stock assessments and fisheries science in the region.

The Study Fleet, a pilot project of the Cooperative Research Program at NOAA's Northeast Fisheries Science Center (NEFSC), began by assembling commercial New England groundfish vessels willing to provide high resolution or haul-by-haul self-reported data on catch, effort, and environmental conditions while conducting normal fishing operations.

"The data these vessels can provide using FLOUNDERS (for Fisheries Logbook Data Recording Software) is more accurate, detailed and comprehensive than would be obtained without deploying expensive observers who are part of the Northeast Fishery Observer Program," said Mike Palmer, a NEFSC fisheries biologist who coordinates the Study Fleet project. The data is available externally only in a form that ensures the privacy of individual operators.

"The fishermen send in their data near real-time to NEFSC using their vessel monitoring systems (VMS). The data are loaded to our databases and made available to fishermen via the internet to view, edit and confirm in less than an hour after a fishing trip has ended," Palmer said. "This allows the industry to ensure that the data received by NMFS are reported as they reported them. They have additional control and accountability for the fisheries data they collect."

Study fleet vessels are equipped with the computer software program and the captains are trained on how to use the electronic logbook system, which includes a gear-mounted temperature-depth probe and a global positioning system (GPS) unit to track precise time and locations of fishing efforts. The temperature probe data, downloaded from the vessel once a month by project staff, enables scientists at the NEFSC to

investigate environmental conditions that may influence catch rates and provide clues to ecosystem-wide changes.

Developing and implementing an electronic logbook system to collect, transfer and store data at sea by fishers was field tested aboard a variety of groundfish vessels during the first two phases of the study fleet project between November 2002 and August 2005. Approximately 1,100 trips were reported by 33 vessels using the system in the Gulf of Maine, Georges Bank and Mid-Atlantic Bight.

Phase Three, which is ongoing, began in September 2006 with six vessels that had participated in Phase Two. All are groundfish vessels but they also participate in the shrimp, squid and fluke fisheries. Vessels receive some financial compensation for their participation in the project.

Bill Lee, captain and owner of the F/V *Ocean Reporter* from Rockport, Mass., has been fishing for more than 38 years and been involved in NOAA's Cooperative Research Program and the Study fleet project from the beginning. "It is very important to have fishermen involved in the research about their industry," he said. "The only way we are going to get things to improve is to participate in the process. I get frustrated at times that things haven't moved further forward, but at least they are moving in the right direction."

Lee has embraced the use of technology and is also working with researchers from a number of organizations in New England on other marine related research projects in the Stellwagen Bank National Marine Sanctuary and in the Gulf of Maine. "It is all about cooperation. Scientists need and want data about the ocean, and fishermen can help provide that."

Captain Dave Goethel of the F/V *Ellen Diane* from Hampton, N.H. agrees that being involved in the process is critical. "If we are going to manage the ocean we need to understand it, and participating in programs like this helps me as a fisherman to understand what is going on. It also helps the scientists learn how fishermen do things, what knowledge and skills they have. Everybody learns."

A fisherman most of his life with a biology degree from Boston University, Goethel has been captain of a boat since 1973, and like Lee has participated in the Cooperative Research Program and the Study Fleet project from the start. Although he admits he isn't very comfortable with computers, he says the study fleet system has gotten much easier to use, and he can see the benefits from the data being collected.

"Getting the environmental data back from NEFSC confirms what I have been seeing in terms of where the fish are," he said. "I can definitely see the trends. One degree change in water temperature can mean cod or another species you are fishing are not where you thought they would be. It isn't always intuitive, either. Sometimes it is colder in waters to the south that you think should be warmer. The data help fishermen understand why they are catching certain fish at certain places at certain times."

In January 2008, the study fleet project expanded into two data poor fisheries, hagfish and tilefish. Palmer says the study fleets have the highest chance of improving stock assessments in data poor fisheries where there is limited observer coverage and species are not sampled well by NEFSC surveys.

Study fleet data have been compared to existing fishery-dependent data collection programs used by the National Marine Fisheries Service in the northeast region, and overall the data are similar to that collected by the Northeast Fishery Observer Program. Data were more accurate and precise than that provided by fishing vessel trip reports in terms of identifying the area of fishing and the duration of effort, and more timely because of the electronic collection and at-sea transmission.

"We need to build trust between fishermen and scientists," Palmer said. "The industry has to trust the scientists enough to want to provide accurate data, and the scientists have to trust the industry enough to believe in the quality of the data."

"This is a cooperative project with the fishing industry," said John Hoey, a fisheries biologist and director of the Cooperative Research Program for NEFSC. "Both sides can benefit from the data collected." Hoey says that despite funding cuts in recent years, the Study Fleet Project has been successful in developing, testing and deploying an electronic logbook system among the New England groundfish fleet.

The Cooperative Research Program, of which the Study Fleet project is a part, was established in 1999 by NOAA Fisheries to involve the fishing industry directly in planning and conducting studies that provide useful information for managing fisheries.

"Sometimes fishermen are surprised by the results from a cooperative research project, but they know they are accurate because they were there," Goethel said. "The results speak for themselves. We need more efforts like this. There is a lot to be gained for everyone."

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Related web links:

Study Fleet Program: http://www.nefsc.noaa.gov/read/popdy/studyfleet/
Evaluation of the Study Fleet Pilot Program Phases I and II:
http://www.nefsc.noaa.gov/nefsc/publications/tm/TM204/